

**Amendments to the Specification:**

**Please replace the Table appearing at page 6, line 19 with the following amended Table:**

Location	Reaction	Reaction Number	Delta G <sub>f</sub>
Anode:	$2\text{NaOH} + \text{C} + \text{H}_2\text{O} \rightleftharpoons \text{Na}_2\text{CO}_3 + 4\text{H}^+ + 4\text{e}^-$	1	[[+]] -0.17V
Cathode:	$4\text{e}^- + 4\text{H}^+ \rightleftharpoons 2\text{H}_2$	2	
	or $4\text{e}^- + 4\text{H}^+ + \text{O}_2 \rightleftharpoons 2\text{H}_2\text{O}$	3	[[+]] -1.15V
		Cell total =	[[+]] -1.32V

**Please replace the Table appearing at page 6, line 21 with the following amended Table:**

Location	Reaction	Reaction Number	Delta G <sub>f</sub>
Anode:	$2\text{KOH} + \text{C} + \text{H}_2\text{O} \rightleftharpoons \text{K}_2\text{CO}_3 + 4\text{H}^+ + 4\text{e}^-$	4	[[+]] -0.21V
Cathode:	$4\text{e}^- + 4\text{H}^+ \rightleftharpoons 2\text{H}_2$	2	
	or $4\text{e}^- + 4\text{H}^+ + \text{O}_2 \rightleftharpoons 2\text{H}_2\text{O}$	3	[[+]] -1.15V
		Cell total =	[[+]] -1.36V

**Please replace the Table appearing at page 7, line 18 with the following amended Table:**

Location	Reaction	Reaction Number	Delta G <sub>f</sub>
Anode:	$\text{Na}_2\text{CO}_3 + \text{CO}_2 + \text{H}_2\text{O} \rightleftharpoons 2\text{NaHCO}_3$	5	
	$\text{NaOH} + \text{CO}_2 \rightleftharpoons \text{NaHCO}_3$	6	
	$3\text{NaHCO}_3 + 1.5\text{C (NaCl media)} \rightleftharpoons 3\text{Na}^+ + 3\text{H}^+ + 4.5\text{CO}_2 + 6\text{e}^-$	7	[[+]] -0.1V
Cathode:	$6\text{e}^- + 3\text{Na}^+ + 3\text{H}^+ + 1.5\text{O}_2 \rightleftharpoons 3\text{NaOH}$	8	[[+]] -0.55V
		Cell total =	[[+]] -0.65V

Please replace the Table appearing at page 7, line 21 with the following amended Table:

Location	Reaction	Reaction Number	Delta G <sub>f</sub>
Anode:	$K_2CO_3 + CO_2 + H_2O \rightleftharpoons 2KHCO_3$	9	
	$KOH + CO_2 \rightleftharpoons KHCO_3$	10	
	and $3KHCO_3 + C \text{ (KCl media)} \rightleftharpoons 3K^+ + 3H^+ + 4.5CO_2 + 6e^-$	11	[[+]] -0.16V
Cathode:	$6e^- + 3K^+ + 3H^+ + 1.5O_2 \rightleftharpoons 3KOH$	12	[[+]] -0.41V
		Cell total =	[[+]] -0.57V

Please replace the Table appearing at page 10, line 3 with the following amended Table:

Location	Reaction	Reaction Number
Anode:	$MgCO_3 + 2C + 3H_2O \rightleftharpoons 3CO_2 + Mg^{2+} + 6H^+ + 8e^-$	13
Cathode:	$Mg^{2+} + 6H^+ + 8e^- + CO_2 + 2O_2 \rightleftharpoons MgCO_3 + 3H_2O$	14
Net Rxn:	$2C + 2O_2 \rightleftharpoons 2CO_2$ Delta G <sub>f</sub> = [[+]] -1.02V	15

Please replace the Table appearing at page 10, line 18 with the following amended Table:

Location	Reaction	Reaction Number
Anode:	$Mg(OH)_2 + 2CO_2 \rightleftharpoons Mg(HCO_3)_2$	16
	or $MgO + H_2O + 2CO_2 \rightleftharpoons Mg(HCO_3)_2$	17
	$Mg(HCO_3)_2 + C \rightleftharpoons Mg^{2+} + 3CO_2 + 2H^+ + 4e^-$	18
Cathode:	$Mg^{2+} + 2H^+ + 4e^- + CO_2 + O_2 \rightleftharpoons MgCO_3 + H_2O$	19
Net Rxn:	$2C + 2O_2 \rightleftharpoons 2CO_2$ Delta G <sub>f</sub> = [[+]] -1.02V	15

**Please replace the paragraph appearing at page 8, lines 1-9 with the following amended paragraph:**

These reactions of the regeneration cell, as summarized above, assume a temperature of about 104°C. The Gibbs free energy voltage for the fuel cell coupled to the regeneration cell is  $[[+]] \approx 1.97$  Volts for the sodium hydroxide cells and  $[[+]] \approx 1.93$  Volts for the potassium hydroxide cells. The voltage per mole of carbon reacted (0.92Volts for sodium and 0.89Volts for potassium) is slightly lower than the  $[[+]] \approx 1.02$ Volts associated with carbon dioxide production. Additionally, in practice, each cell has an internal resistance and the two-cell configuration aggravates this loss. This can be partially overcome by combining the two cells in a bipolar configuration wherein a graphite-carbon electrode is modified as an anode on one side and as a cathode on the other side.